

Final Technical Report
ONR AASERT Award No. N00014-95-1-0882

The research program addressed a specific problem in the field of wave propagation in random media: computing the average field for the case of a plane wave incident on a region with a weakly fluctuating sound speed. A review of the existing mathematical methods for treating this problem in both the small and large-scale fluctuation cases was completed. In the small-scale regime, previously unrecognized problems with the closure theory were discussed and numerical results were given, which illustrate the role played by backscattering in this type of propagation. In the large-scale regime, a new mathematical approach, analogous to the renormalization technique, was described and used to derive a new expression for the mean field valid in this limit. This result was systematically compared with the tradition expressions for this quantity.

This AASERT grant resulted in the successful completion of the Ph.D. thesis of Joshu Goldberg and also partially supported the successful Ph.D. thesis research of Jason Fleischer.

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7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Patrick H. Diamond University of California, San Diego Physics 0319, 9500 Gilman Drive La Jolla, CA 92093-0319			8. PERFORMING ORGANIZATION REPORT NUMBER FTR-0882/01	
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13. ABSTRACT (Maximum 200 words) Problems in the theory of wave propagation in random media were addressed. Significant progress was achieved in the large scale regime. A new renormalization technique was developed for the mean field in this limit. Two Ph.D. theses were successfully completed.				
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